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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,609	09/05/2006	Jurgen Meyer	032301.236168 (39509.2361	3090
441	7590	04/02/2009	EXAMINER	
SMITH, GAMBRELL & RUSSELL 1130 CONNECTICUT AVENUE, N.W., SUITE 1130 WASHINGTON, DC 20036			LOEWE, ROBERT S	
			ART UNIT	PAPER NUMBER
			1796	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/591,609

**Applicant(s)**

MEYER ET AL.

**Examiner**

ROBERT LOEWE

**Art Unit**

1796

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 March 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's amendments regarding claims 1 and 2 have been fully considered. The prior art rejection of instant claim 1 under Bergstrom et al. has been removed in light of Applicants arguments.

Applicant's arguments regarding claims 1-8 (Barthel et al.) have been fully considered and are found to be persuasive. Specifically, the Examiner is persuaded that the silica fillers taught by Barthel et al. would not necessarily possess DPB values which satisfy the limitations of instant claim 1 in light of Applicants arguments. However, Barthel et al. is still relied upon as a primary reference as shown below.

Further, new grounds of rejection are also introduced as described below. This Office action is non-final, owing to the new grounds of rejection which were not necessitated by Applicants amendments.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(c), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barthel et al. (US application 2003/0138715) further in view of Nargiello (US Pat. 6,193,795).

Claim 1: Barthel et al. teaches a process of preparing surface-modified, low-silanol silica by reacting one or more organosilanes with silica (abstract). Barthel et al. teaches that suitable silylating agents include vinylalkoxysilanes and alkylalkoxysilanes (paragraph 0039). Specifically, Barthel et al. teaches that suitable silanes include vinyltrimethylchlorosilane and divinyltetramethyldisilazane (paragraph 0039). Both of these species of silanes would inherently yield silanized silica having **both** vinylsilyl groups and methylsilyl groups are required by instant claim 1. Barthel et al. additionally teaches that the surface-modified silicas have a BET surface area of 25 to 500 m<sup>2</sup>/g (paragraph 0123), an average particle size of 5-100 nm (paragraphs 0077 and 120), and a carbon content of 1.7-5.4% (Table 1-1). Barthel et al. further teaches that the starting silica has, for example, a pH of 4.1 (paragraph 0183).

Barthel et al. is silent with regards to the DPB absorption. However, Nargiello et al. teaches low-structure silica having DBP absorption which satisfies the limitations of instant claim 1. Barthel et al. and Nargiello et al. are combinable because they are from the same field of endeavor, namely, pyrogenic silicas used as fillers for silicone rubbers. At the time of the invention, a person having ordinary skill in the art would have been motivated to subject the silica as prepared by Barthel et al. to the destructuring processes taught by Nargiello et al. and

would have been motivated to do so since Nargiello et al. teaches that pyrogenically prepared metallic oxides (such as silica) have high structure which prevents high filler loadings and causes excessive viscosity build-up and low extrusion rates making formulations difficult to handle and process (1:39-43). Further, Barthel et al. teaches that subjecting the silica produced therein to deagglomeration processes, such as ball milling, pinned-disk milling, hammer milling, etc. it preferred (paragraph 0066).

Claim 2: Barthel et al. teaches a process for producing silanized, structurally modified silica comprising: (a) mixing/treating the pyrogenically prepared silica and silylating agents (paragraph 0050-0057), (b) reacting the pyrogenically prepared silica and silylating agent mixture by heating the mixture (paragraphs 0058-0060), and (c) purifying the silylated silica by means of mechanical action (paragraphs 0061-0067). Barthel et al. further teaches additional steps which may take place following the purification of the pyrogenically-produced silica, involving mechanical compaction/destruction by means of a press-roller, or grinding equipment such as ball mills (paragraphs 0064-0065). Therefore, Barthel et al. teaches structural modification steps involving mechanical action which acts to destructure the silica. Such a destructuring process would satisfy the limitation "to form low structured, pyrogenic silica". The limitation that the silanized, structurally modified pyrogenically produced silica is recovered is inherently taught by Barthel et al. by the simple fact that Barthel et al. performs analysis of the final silylated silica (i.e., the silica must have been recovered in order to perform the analytical testing). Barthel et al. teaches that suitable silylating agents include vinylalkoxysilanes and alkylalkoxysilanes (paragraph 0039).

Claim 3: Barthel et al. further teaches that the silica can be first sprayed with water and then with the surface-modifying agent (paragraph 0185).

Claim 4: Barthel et al. further teaches that the silica is treated with the surface-modifying agent in vapor form (paragraph 0185). It is the position of the examiner that by introducing the surface-modifying agent via atomization through a nozzle, Barthel et al. teaches that the surface-modifying agent is introduced in vapor form. One definition of vapor as defined by Merriam-Webster is "diffused matter (as smoke or fog) suspended floating in the air and impairing its transparency". While vapor is also defined as a material in its gaseous state, one could reasonably apply the first definition cited above; therefore Barthel et al. anticipates the limitations of instant claim 4.

Claims 5 and 6: Barthel et al. further teaches many post surface-modification steps can be performed, including grinding and compacting and conditioning (paragraphs 0061-0069).

Claim 7: Barthel et al. further teaches that the silicone rubber can be used as fillers (paragraph 0180).

Claim 8: Barthel et al. further teaches that prior to the heat-treatment step, a mixing step can be performed (residence time of 2.5 hours at 25 °C as taught in paragraph 0187).

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartmann et al. (US Pat. 5,959,005) in view of Fitzgerald et al. (US Pat. 5,623,028).

Hartmann et al. teaches silanized silica which is prepared according to the instant claims and further possesses all of the claimed physicochemical properties of instant claim 1 (reference in its entirety). Hartmann et al. teaches that the silanization agent is hexamethyldisilazane (1:45-

46). Hartmann et al. does not explicitly teach that the silanization agent may possess vinylsilyl groups. However, Fitzgerald et al. teaches silicone rubber compositions which may be filled with silica fillers which are treated with a silanization agent possessing vinylsilyl groups, such as tetramethyldivinyldisilazane (7:16). Hartmann et al. and Fitzgerald et al. are combinable because they are from the same field of endeavor, namely, silica fillers treated with hydrophobic silanization agents which may be used as fillers for addition curable polysiloxane compositions. At the time of the invention, a person having ordinary skill in the art would have found it obvious to utilize a silanization agent which possesses a vinylsilyl group as taught by Fitzgerald et al. in the preparation of the silica taught by Hartmann et al. and would have been motivated to do so since Fitzgerald et al. teaches that modification of silica surfaces with vinyl functional groups results in fillers which are capable of reacting with the polymer matrix allows which adjusts the physical properties of the addition-curable polysiloxane compositions allowing for improvement in physical properties or maintaining the same physical properties with less filler (3:59-64, 5:49-57 and 7:12-22).

### *Correspondence*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Loewe whose telephone number is (571)270-3298. The examiner can normally be reached on Monday through Friday from 5:30 AM to 3:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1796

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. L./

Examiner, Art Unit 1796

30-Mar-09

/Randy Gulakowski/

Supervisory Patent Examiner, Art Unit 1796